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**REMARKS****I. General**

Claims 1-3, 7, 9-14, and 35-70 were pending in the present application. Claims 1-3, 7, 9-14, and 35-52 were rejected and claims 53-70 were withdrawn from consideration as a result of a restriction requirement in the current Final Office Action (mailed April 7, 2004). The outstanding issues in the current Final Office Action are:

- Claims 53-70 were withdrawn from consideration as a result of a restriction requirement;
- Claim 42 is objected to under 37 CFR 1.75(c);
- Claims 1-3, 7, 9-14, and 35-52 are rejected under 35 U.S.C. § 101 as lacking patentable utility;
- Claims 9 and 37 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement; and
- Claims 1-49 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In response, Applicant respectfully traverses the outstanding claim rejections, and requests reconsideration and withdrawal thereof in light of the amendment and remarks presented herein.

**II. Amendment to Claims 35, 36, and 42**

Claim 42 is amended herein to correct a typographical error such that claim 42 now correctly depends from claim "41" rather than canceled claim 31. This amendment is intended to correct this informality is not intended to narrow the scope of claim 42, nor is this amendment made to overcome the prior art. As this amendment corrects this typographical error and thus reduces the number of issues present in the present application, Applicant respectfully requests that this amendment be entered.

Claim 35 is amended to recite “determining a best predictor set of  $k$  number of said features for predicting said target” (where the underlined word “said” is added by this amendment). This amendment is made to avoid ambiguity with the recited term “features” by clarifying that the recited “features” are those for which antecedent basis is established in claim 1 (i.e., “features associated with a target”).

Claim 35 is further amended to reorganize the terms of one element thereof to improve that elements clarity. Particularly, the element “using the determined best predictor set of  $k$  features for predicting said target” is reorganized to recite “using, for predicting said target, the determined best predictor set of  $k$  features.” This amendment is made solely to clarify that the determined best predictor set of  $k$  features are used for predicting the target. This is not intended as a narrowing amendment, as this was the same limitation intended by the original language of this element, but rather this language is reorganized to avoid any confusion in this regard. As this amendment does not present new limitations, but instead reorganizes the existing limitations for improved readability, this amendment reduces the number of issues present in the present application, and thus Applicant respectfully requests that this amendment be entered.

In view of the above amendment to claim 35, claim 36 is amended herein by deleting the phrase “for predicting said target”. This is not intended as a narrowing amendment, and is made solely for the purpose of consistency in phraseology with amended claim 35. As this amendment simply improves the consistency in phraseology it does not raise new issues, and thus Applicant respectfully requests that this amendment be entered.

### **III. Restriction Requirement for Claims 53-70**

Claims 53-70 were withdrawn from consideration as a result of a restriction requirement. Applicant respectfully traverses this restriction and submits that claims 53-70 should not be withdrawn from consideration but should remain in the present application, as discussed further below.

Applicant respectfully asserts that the present Office Action fails to establish a prima facie case with regard to the required restriction between the considered claims 1-3, 7, 9-14, and 35-52 and the restricted claims 53-70, and therefore the restriction should be withdrawn.

In general, there are two criteria for a proper requirement for restriction between patentably distinct inventions: (A) the inventions must be independent or distinct as claimed; and (B) there must be a serious burden on the examiner if restriction is required. M.P.E.P. § 803. As discussed below, the present Final Office Action has failed to properly establish that the considered claims 1-3, 7, 9-14, and 35-52 and the restricted claims 53-70 are independent or distinct. Further, a serious burden would not be placed on the Examiner if the restriction between these groups of claims is not required.

A. Final Office Action Fails to Establish Claims as Being Independent or Distinct

The Final Office Action contends that claims 53-70 “recite different method steps and are apparently directed to different results than is the originally elected method of original claims 1-14.” Without conceding that this assertion is accurate (*see e.g.*, the below discussion regarding serious burden), Applicant respectfully submits that this is not the proper criteria for establishing a *prima facie* case for requiring restriction. That is, simply because different method steps may be recited does not necessarily mean that a restriction is proper.

Further, while the current Final Office Action concludes that the new claims recite limitations not recited in the elected claims and would therefore require a different search, M.P.E.P. § 816 provides that a “mere statement of conclusion is inadequate” in establishing a restriction requirement. Rather, the “reasons upon which the conclusion is based should be given.” M.P.E.P. § 816 further directs that the “separate inventions should be identified by a grouping of the claims with a short description of the total extent of the invention claimed in each group, specifying the type or relationship of each group as by stating the group is drawn to a process, or to subcombination, or to product, etc., and should indicate the classification or separate status of each group, as for example, by class and subclass.”

In the present case, Applicant received a first restriction requirement for the originally filed claims (*see* the Office Action mailed June 24, 2003) in which the claims were grouped into the following three groups: I. claims 1-14 drawn to a method for determining a predictor set of features, classified in class 703, subclass 2; II. claims 15-29 and 31-34 drawn to a method of network reconstruction and computer software and computer system for running the method, classified in class 709, subclass 249; and III. claim 30 drawn to a method of

classifying experiments, classified in class 702, subclass 27. Now Applicant has presented additional claims drawn to the elected method of determining a predictor set of features, and the Examiner asserts that these claims fall within a different classification, requiring further restriction. Applicant does not understand how this can be considering the restriction requirement of June 24, 2003 in which the Examiner established the claims drawn to a method for determining a predictor set of features as being grouped together in that restriction requirement. That is, if claims 1-14 were identified as grouped together and classified in class 703, subclass 2, Applicant fails to understand why the newly presented claims 53-70 which are also directed to a method for determining a predictor set of features would be classified differently as independent or distinct inventions.

Indeed, the present Final Office Action does not establish that the restricted claims have separate status or classification. For instance, the Final Office Action does not contend that the restricted claims fall under a separate class and subclass from the considered claims. Instead, the Final Office Action merely notes that the restricted claims recite limitations not recited in the considered claims. This is insufficient for establishing that the restricted claims are independent or distinct from the considered group of claims. In view of the above, the Final Office Action has not properly established that the restricted claims are independent or distinct from the considered claims. Therefore, this restriction requirement should be withdrawn.

#### B. No Serious Burden if Restriction not Required

Additionally, if “the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to independent or distinct inventions.” M.P.E.P. § 803. The Final Office Action fails to adequately establish that such a serious burden would arise in the present case if the restriction is not made. Indeed, as explained further below, like elements to those required to be searched and examined for the considered claims are also present in the restricted claims. For instance, similar elements to those recited in restricted claim 53 are found in the considered claims, as described below.

The first element of claim 53 recites “selecting  $k-1$  subset of features associated with a target”. Similarly, claim 37 of the considered group of claims recites “selecting  $k-1$  features associated with said target”.

The next element of claim 53 recites “ordering the  $k-1$  subset of features in a list”. Similarly, claim 42 of the considered group of claims, which depends indirectly from claim 37 mentioned above, recites “ordering the  $k-1$  subset of features in a list”.

The next element of claim 53 recites “adding to one end of the list a complement feature to form a predictor set of  $k$  features, wherein said complement feature is a feature that when added to the  $k-1$  subset forms the highest quality set of  $k$  features for predicting said target”. Similarly, claim 1 of the considered group of claims recites “adding at least one complement to said predictor set based on a quality of prediction”, and claim 43 of the considered group of claims (which depends from claim 42 mentioned above) recites “adding said at least one complement to one end of said list.”

The next element of claim 53 recites “determining whether the features of the predictor set have appeared  $k$  consecutive times”. Similarly, claim 39 of the considered group of claims recites “checking to see if all of said  $k$  features of said predictor set have been repeated  $k$  times in a row.”

The next element of claim 53 recites “if the features of the predictor set have not appeared  $k$  consecutive times, then removing a feature from the other end of the list”. Similarly, claim 40 of the considered group of claims recites “if determined in step (c) that all of said  $k$  features of said predictor set have not been repeated  $k$  times in a row, removing at least one feature from said predictor set”, and claim 44 of the considered group of claims (which depends indirectly from claim 40) recites “wherein said removing at least one feature from said predictor set comprises: removing said at least one feature from the other end of said list”.

The next element of claim 53 recites “if the features of the predictor set have appeared  $k$  consecutive times, then determining that the predictor set is a best predictor set of  $k$  features for predicting said target”. Similarly, claim 41 of the considered group of claims recites “(e) if determined in step (c) that all of said  $k$  features of said predictor set have been repeated  $k$

times in a row, then determining such predictor set as a best predictor set of  $k$  features for predicting said target.”

The final element of claim 53 recites “using the determined best predictor set of  $k$  features for predicting said target.” Similarly, claim 35 of the considered group of claims recites “using the determined best predictor set of  $k$  features for predicting said target.”

In view of the above, very similar elements to those found in claim 53 are included in the considered group of claims. Thus, Applicant respectfully submits that no serious burden exists in searching and examining the restricted group of claims along with the considered group of claims. Accordingly, Applicant submits that the restriction of claims 53-70 is improper in this instance, and respectfully requests that the Examiner withdraw this restriction and include such claims 53-70 in the examination of the present application.

#### **IV. Objection to Claim 42**

Claim 42 is objected to under 37 CFR 1.75(c) as depending from claim 31, which has been canceled. As described above, claim 42 is amended herein to correct this typographical error so that claim 42 correctly depends from claim 41. Thus, withdrawal of this objection is respectfully requested.

#### **V. Claim Rejections Under 35 U.S.C. § 101**

Claims 1-3, 7, 9-14, and 35-52 are rejected under 35 U.S.C. § 101 as lacking patentable utility. Applicant respectfully reasserts the arguments presented in Applicant’s previous response, and briefly supplements the previous response below in traversing this rejection. In view of these arguments, Applicant respectfully submits that this rejection is improper and requests withdrawal thereof.

The Final Office Action maintains that “the method steps recited do not appear to comprise physical manipulation of matter, but appear to be steps equivalent to mental processes.” Page 3 of Final Office Action. The Final Office Action does not cite any authority that requires a method step to comprise physical manipulation of matter. Further, Applicant is not aware of any authority or requirement that a method step comprise physical manipulation of matter in this manner. As discussed below, Applicant submits that the

method claims satisfy the requirements of the language of 35 U.S.C. § 101, and Applicant is not aware of any additional criteria beyond that addressed below which Applicant's claims are required to satisfy in order to be considered proper patentable subject matter under 35 U.S.C. § 101. Thus, Applicant respectfully requests that the Examiner specifically identify the law, rule or other authority on which the Examiner relies in making the above statement.

The language of 35 U.S.C. § 101 does not impose a requirement that method steps comprise physical manipulation of matter. Rather, 35 U.S.C. § 101 provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title" (emphasis added). M.P.E.P. § 2106.IV.A. explains:

As cast, 35 U.S.C. 101 defines four categories of inventions that Congress deemed to be the appropriate subject matter of a patent; namely, processes, machines, manufactures and compositions of matter. The latter three categories define "things" while the first category defines "actions" .... See 35 U.S.C. 100(b) ("The term 'process' means process, art, or method, and includes a new use of a known process, machine manufacture, composition of matter, or material.").

Thus, a process is recognized specifically by 35 U.S.C. § 101 as appropriate subject matter of a patent. As such, Applicant respectfully submits that the claims of the present application that are directed to a "method" fall within this recognized category of appropriate patentable subject matter. Accordingly, 35 U.S.C. § 101 provides that Applicant "may obtain a patent therefor, subject to the conditions and requirements" of title 35 of the U.S.C.

As the Supreme Court has held, Congress chose the expansive language of 35. U.S.C. 101 so as to include "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09, 206 U.S.P.Q. 193, 197 (1980). M.P.E.P. § 2106.IV.A. further explains that the "subject matter courts have found to be outside the four statutory categories of invention is limited to abstract ideas, laws of nature and natural phenomena" (emphasis added). "These three exclusions recognize that subject matter that is not a practical application or use of an idea, a law of nature or a natural phenomena is not patentable." M.P.E.P. § 2106.IV.A. (emphasis in original).



It appears that the Final Office Action in asserting that “the method steps recited do not appear to comprise physical manipulation of matter, but appear to be steps equivalent to mental processes” is effectively alleging that the method claims of the present application falls within one of the above three exclusions (e.g., abstract ideas). However, Applicant submits that the method claims provided in the present application do not fall within the above three exclusions because they recite subject matter that is a “practical application or use” for the method.

More specifically, claim 1 recites a “method for determining a predictor set of features associated with a target”. As described in the specification of the present application, determining such a predictor set of features for predicting a target has much application in, as examples, using such predictor set of features for identifying a gene of interest in a sample or disease identification. *See e.g.*, pages 1-3 and page 7, line 18- page 8, line 18 of the present application. The present application defines the term “feature” as “expression levels or biological data of a defined gene, protein, or other biological function or component under consideration and over a prescribed number of experiments.” Page 5, lines 24-26 of present application. Again, the present application describes that determining a predictor set of such features associated with a target has a desirable application in that the determined predictor set can be used for identifying a target (e.g., a gene of interest, etc.).

In response to the above arguments regarding the practical application or use for the claimed methods, the present Final Office Action notes “that the claims do not recite any genes or diseases, nor any association with pharmaceuticals or therapy.” Page 5 of Final Office Action. Applicant respectfully submits that there is no requirement that the practical application(s) or use(s) be expressly recited in the method claims. Rather, it is sufficient that at least one such practical application or use can be determined from the application’s specification, which evidences that the claimed method has some utility. In the present case, many example practical applications for the claimed method have been described in the specification (as noted above), thus evidencing that the claimed method does not lack utility but instead has utility at least in the example practical applications identified in the specification.

The Final Office Action further reminds Applicant that “the results of a method must be of ‘immediate benefit to the public’ (See e.g., *Brenner v. Manson*, 383 U.S. 519, 534-35,

148 USPQ 689, 695 (1966)).” Applicant submits that the methods of the present application provide results that are of immediate benefit to the public. For instance, claim 1 provides a method for determining a predictor set of features associated with a target. As described above, determining such a predictor set of features is immediately beneficial to the public in such applications as using such a predictor set for identifying a gene of interest in a sample or for disease identification. *See e.g.*, pages 1-3 and page 7, line 18- page 8, line 18 of the present application. Accordingly, further research regarding potential uses of the methods is not required, as at least some example uses are identified in the specification of the present application.

The Final Office Action asserts that “it is unclear what association, if any, the predictor set has with a target, thus requiring further research.” Applicant respectfully disagrees. Applicant respectfully submits that claim 1 is clearly directed to a method for determining a predictor set where the predictor set is of features associated with a target. Thus, the association that the predictor set has with a target is that such predictor set is made up of features associated with the target which are usable for predicting the target. In this manner a predictor set having some number (*e.g.*, *k*) of features associated with a target that are usable for accurately predicting the target is determined.

The Final Office Action appears to concede that the method for determining a predictor set for a target has utility at least when the target itself has a known utility, *see* page 5 of Final Office Action. However, the Final Office Action goes on to assert that the method could be used for predicting a target that does not have utility, in which case the Final Office Action asserts the method may not have utility. However, having the capability of predicting a target (*e.g.*, gene, disease, or other target) may be of benefit even if the target itself is arguably of no utility. For instance, a given disease may be of no utility (or of detrimental utility) but having the ability to predict such disease from a predictor set of features associated with such disease may be of benefit (*e.g.*, for early detection, treatment, etc.).

Further, there is no requirement that a claimed method have utility for all possible uses thereof. As long as there is at least one immediate beneficial use for the method, it satisfies the utility requirement. As M.P.E.P. § 2107.02.I. provides “regardless of the category of invention that is claimed (*e.g.*, product or process), an applicant need only make one credible assertion of specific utility for the claimed invention to satisfy 35 U.S.C. 101

and 35 U.S.C. 112”. *Citing In re Gottlieb*, 328 F.2d 1016, 1019, 140 USPQ 665, 668 (CCPA 1964) (“Having found that the antibiotic is useful for some purpose, it becomes unnecessary to decide whether it is in fact useful for the other purposes ‘indicated’ in the specification as possibly useful.”). “Thus, if applicant makes one credible assertion of utility, utility for the claimed invention as a whole is established.” M.P.E.P. § 2107.02.I. Further, M.P.E.P. § 2107.03 notes that the “Federal Court have consistently reversed rejections by the Office asserting a lack of utility for inventions claiming a pharmacological or therapeutic utility where an applicant has provided evidence that reasonably supports such a utility” and thus “Office personnel should be particularly careful in their review of evidence provided in support of an asserted therapeutic or pharmacological utility.”

In view of the above, Applicant respectfully submits that the method claims are directed to proper statutory subject matter in accordance with 35 U.S.C. § 101, and thus withdrawal of this rejection is requested.

#### Claims 14 and 51

In view of the above, Applicant respectfully submits that the present application identifies various practical applications of the claimed method. Thus, the recited method of determining a predictor set of features associated with a target provides a “useful, concrete and tangible” result that has real-world value. For instance, the application describes a practical application for identifying a gene of interest in a sample or for disease identification. *See e.g.*, pages 1-3 and page 7, line 18- page 8, line 18 of the present application.

With regard to claims 14 and 51, the Final Office Action notes that these claims recite that at least some steps are performed by a processor-based device and are therefore directed to a computer-implementation. As discussed in detail in Applicant’s previous response, to be statutory, “a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan ..., or (B) be limited to a practical application within the technological arts” (emphasis added). M.P.E.P. § 2106.IV.B.2(b). Applicant submits that at least element (B) is satisfied, and so long as either condition is satisfied the computer-related process is deemed statutory under 35 U.S.C. § 101.

With regard to element (B) above, M.P.E.P. § 2106 explains that for “such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts.” This ensures that the process is not one that merely manipulates an abstract idea or performs a purely mathematical algorithm. “A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful.” M.P.E.P. § 2106.

In the present case, claims 14 and 51 produce a concrete, tangible and useful result in that the recited method is for “determining a predictor set of features associated with a target” (see claim 1). Such a determined predictor set of features is a concrete, tangible and useful result. In other words, the operations recited in claim 1 are limited to a practical application thereof (as opposed to being directed to an abstract idea or purely mathematical algorithm) in that those operations are applied for determining a predictor set of features associated with a target. Accordingly, claims 14 and 51 are directed to proper statutory subject matter under 35 U.S.C. § 101. Therefore, Applicant respectfully requests withdrawal of this rejection of claims 14 and 51.

#### **VI. Claim Rejections Under 35 U.S.C. § 112, First Paragraph**

Claims 9 and 37 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Particularly, claims 9 and 37 each recite that “ $k$  is a number greater than 1”. The current Final Office Action asserts (at page 7 thereof) that “[w]hile various specific values for ‘ $k$ ’ are recited throughout the specification, specifically  $k=2$  and  $k=3$ , a disclosure that ‘ $k$ ’ must be ‘greater than 1’ is not found anywhere in the original specification.” Therefore, the Office Action concludes that the application as originally filed does not provide support for the limitation found in claims 9 and 37 that “ $k$  is a number greater than 1”.

Applicant respectfully disagrees and submits that the recitation of “ $k$  is a number greater than 1” in claims 9 and 37 is sufficiently supported by the specification of the present application so as to comply with the written description requirement of 35 U.S.C. § 112, first paragraph. As noted by the current Office Action, the specification provides various examples in which  $k$  is greater than 1, including  $k=2$ ,  $k=3$ . Applicant further notes that the

original specification provides an example of  $k=4$  (see e.g., page 16, lines 17-33 of original specification). Additionally, claims 13 and 28, as originally filed, recited where the predictor set has a size of between 1-1000 features, and thus supports many values of  $k$  that is greater than 1. Further, from such specification, one of ordinary skill in the art would readily recognize that  $k$  may assume other values.

An *ipsis verbis* disclosure is not necessary to satisfy the written description requirement of §112. Rather, if the essence of the original disclosure supports the new claim limitation, the new limitation is not new matter. *In re Wright*, 9 U.S.P.Q.2d 1649 (Fed. Cir. 1989). From the disclosure of the present application, one of ordinary skill in the art would readily recognize that in certain embodiments the value of  $k$  may be a value greater than 1. For instance, at page 13, lines 3-4 the specification states the problem as follows: “For a given number  $k=2,3,\dots$ , a set of  $n$  features  $S$ , and a target  $G$  120, to find the best quality subset of features  $s$  of size  $k$ .” It is clear from this description that  $k$  may be greater than 1, and further it is clear that  $k$  is not intended to be limited to 2 or 3 (e.g., see the “ $\dots$ ” following the value “3” in the quoted description of what  $k$  may equal).

In view of the above, Applicant respectfully submits that the element “ $k$  is a number greater than 1” of claims 9 and 37 is fully supported by the original specification and thus is proper under 35 U.S.C. § 112, first paragraph. As such, Applicant requests withdrawal of this rejection.

## **VII. Claim Rejections Under 35 U.S.C. § 112, Second Paragraph**

Claims 1-49 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant notes that claims 4-6, 8, and 15-34 have been canceled, and thus the above rejection cannot apply to those claims. The Final Office Action specifically addresses claims 1, 2, 35, 36, 39, 42, 45, 46, 47, 49, and 52. As such, Applicant assumes that this rejection is limited to those claims that are specifically addressed in the Final Office Action. The rejection of such claims are each traversed below.

Claims 1, 2, and 39

With regard to claim 1, the Final Office Action asserts on pages 7-8 thereof that the element “checking to see if all of said features are repeated” is indefinite in view of the limitations of claims 2 and 39. More particularly, the Final Office Action explains that “the examiner interpreted this step to be a checking step to see if the same set of  $k$  features have appeared  $k$  times in a row”, and the Final Office Action contends that because claims 2 and 39 recite this limitation of repeating  $k$  times in a row, it “renders it unclear what (different/broader?) limitation was intended for claim 1.”

Applicant respectfully submits that claim 1 is not indefinite or unclear, but instead the above confusion results from the examiner improperly reading limitations into claim 1 which are simply not there. Claim 1 clearly recites “checking to see if all of said features are repeated”, and does not place any limitation on the number of times that the features are repeated in a row. That is, claim 1 does not require that all of the ( $k$ ) features be repeated  $k$  times in a row. Instead, claim 1 merely recites “checking to see if all of said features are repeated”. Further, Applicant has not made any arguments or indications that would lead one to believe that claim 1 has a scope different than its plain language. Indeed, in Applicant’s previous response, Applicant argued that the applied *Pudil* reference lacked this step because the oscillating search algorithm taught by *Pudil* does not check to see if all of the features of a predictor set are repeated. Applicant has not made any argument or suggestion that this element of claim 1 requires that all of said features be repeated  $k$  times in a row.

Thus, Applicant respectfully submits that claim 1 is not indefinite, and to the extent that dependent claims 2 and 39 recite that this checking step checks whether a set of  $k$  features have repeated  $k$  times in a row, those claims are narrower than the scope of the plain language of claim 1 and thus are also proper. Therefore, Applicant respectfully requests that the rejections of claims 1, 2, and 39 under 35 U.S.C. § 112, second paragraph be withdrawn.

Claims 35, 36, 45, 46, and 49

The Final Office Action asserts that the “term ‘best’ in claims 35, 36, 45, 46, and 49 is a relative term which renders the claim indefinite.” Page 8 of Final Office Action. However, there is no prohibition against using relative terms in a claim. The fact that claim language,

including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. § 112, second paragraph. M.P.E.P. § 2173.05(b), citing *Seattle Box Co., v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). “Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification.” M.P.E.P. § 2173.05(b). As discussed further below, Applicant respectfully submits that the use of the term “best” in the present case is sufficiently definite under 35 U.S.C. § 112, second paragraph.

### **Claims 35 and 36**

Claim 35, as amended herein, recites “determining a best predictor set of  $k$  number of said features for predicting said target”. Claim 36 depends from claim 35 and recites “said best predictor set”. Thus, if the recited best predictor set of claim 35 is sufficiently definite under 35 U.S.C. § 112, second paragraph, so is its usage in claim 36.

The usage of “best predictor set of  $k$  number of said features” in claim 35 is sufficiently definite. For instance, the claim clearly recites the “best predictor set” as that set of  $k$  number of the features (which are recited in claim 1 as features associated with the target) for predicting the target. Thus, of the recited “features associated with a target” (claim 1), the best  $k$  number of features for predicting the target are determined.

Additionally, the specification provides assistance in understanding the relative term “best” in this instance. For example, page 11, lines 22-27 provides:

This process (of deleting a feature and adding another feature) may be repeated many times until a subset is reached whose quality of prediction can not be improved by deleting and then adding a single feature. This subset of size  $k$  ( $k=2$  here) is referred to as an “attractor” 230 (shown generally as 230 in the block diagram of FIG. 2). The method then terminates and outputs the “attractor” as the best (in terms of quality of prediction of the target expression) subset of size  $k$  ( $k=2$  here). (Emphasis added).

Thus, the specification aids one of ordinary skill in the art regarding the standard for measuring the degree of the recited “best” term in that it clarifies that it is measured in terms of quality of prediction of the target. As such, Applicant respectfully requests withdrawal of this rejection of claims 35 and 36.

**Claims 45, 46, and 49**

Claims 45, 46 and 49 each depend either directly or indirectly from claim 41, which recites “if determined in step (c) that all of said  $k$  features of said predictor set have been repeated  $k$  times in a row, then determining such predictor set as a best predictor set of  $k$  features for predicting said target.” Thus, claim 41 defines what is meant by the best predictor set” in that it specifies a predictor set is determined as a “best predictor set of  $k$  features” (i.e., when all of said  $k$  features of the predictor set have been repeated  $k$  times in a row). Thus, for claims 45, 46, and 49, the usage of “best predictor set” is sufficiently defined within claim 41 from which they depend. In other words, in view of claim 41 the “best predictor set of  $k$  features” are determined as those features that have been repeated  $k$  times in a row. Accordingly, the claim language itself in this instance sufficiently defines what is meant by “best predictor set”. As such, Applicant respectfully requests that this rejection of claims 45, 46, and 49 be withdrawn.

Claim 35

In addition to the above, claim 35 is further rejected under 35 U.S.C. § 112, second paragraph because the Final Office Action asserts that the language “using the determined best predictor set of  $k$  features for predicting said target” is unclear as to whether the predictor set of  $k$  features are used for predicting the target. Page 8 of Final Office Action. Without conceding that the original language is properly rejected under 35 U.S.C. § 112, second paragraph, Applicant has amended this element of claim 35 herein to recite “using, for predicting said target, the determined best predictor set of  $k$  features.” Thus, this makes clear that the determined best predictor set of  $k$  features is used for predicting the target. Accordingly, Applicant respectfully requests withdrawal of this rejection of claim 35.

Claim 36

Claim 36 is further rejected under 35 U.S.C. § 112, second paragraph because the Final Office Action asserts that it is unclear what method steps are intended by the term “using” in such claim 36. Page 8 of Final Office Action. Applicant respectfully disagrees. Claim 36 clearly recites “using said best predictor set of  $k$  features to determine whether said target is present in a sample.” Thus, using the best predictor set of  $k$  features for determining



whether the target is present in a sample is the method step of this claim. This is not indefinite. For instance, the claim clearly recites what is used (i.e., the best predictor set of  $k$  features) and what they are used for (i.e., determining whether the target is present in a sample). The Examiner is respectfully reminded that breadth of a claim is not to be equated with indefiniteness. M.P.E.P. § 2173.04, citing *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971).

In view of the above, Applicant respectfully requests withdrawal of this rejection of claim 36.

#### Claim 42

The Final Office Action asserts that “the  $k-1$  subset of features” of claim 42 lacks proper antecedent basis. As described above, claim 42 is amended herein to depend from claim 41, and thus proper antecedent basis for this phrase is now provided (*see e.g.*, claim 37 from which claim 42 indirectly depends). Thus, Applicant respectfully requests withdrawal of this rejection.

#### Claims 46 and 47

The Final Office Action asserts that the term “incrementing” of claim 46 and the term “incremented” of claim 47 are indefinite. Applicant respectfully disagrees with this rejection. The terms incrementing and incremented are common terms in the English language, and Applicant has not advanced any meaning of these terms that is contrary to their plain meaning. Further, the Final Office Action identifies a definition (by Webster) of these terms, evidencing that they have a known meaning in the English language. This is further evidenced by the definition of “increment” provided in Merriam-Webster’s Collegiate Dictionary, Deluxe Edition, Copyright 1998 (ISBN 0-87779-714-5) (a copy of such definition is attached hereto for the Examiner’s reference), which defines increment as follows:

**1:** the action or process of increasing especially in quantity or value :  
ENLARGEMENT

**2 a:** something gained or added **b:** one of a series of regular  
consecutive additions

**c:** a minute increase in quantity

**3:** the amount or degree by which something changes; *especially*: the  
amount of positive or negative change in the value of one or more of a set of  
variables

Thus, the term “increment” is a well-known and commonly used term in the English language. The Final Office Action contends that because one usage of the term increment means the quantity by which a variable increases or decreases the term is indefinite (as under this usage it may be interpreted to mean increasing or decreasing). *See* page 9 of Final Office Action. Without conceding that this usage of the term “increment” is proper for interpreting the claims of the present application, Applicant respectfully submits that this usage does not render the claim indefinite. The Examiner is again reminded that breadth of a claim is not to be equated with indefiniteness. M.P.E.P. § 2173.04, citing *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). Thus, even though the term “increment” may be interpreted to have a broad meaning to encompass either increasing or decreasing (without conceding that this is the proper interpretation), such breadth of the term does not render the term indefinite.

In view of the above, Applicant respectfully requests withdrawal of this rejection of claims 46 and 47.

#### Claim 52

The Final Office Action rejects claim 52 under 35 U.S.C. § 112, second paragraph because the Final Office Action asserts that it “is unclear what the measurement data is intended to ‘correspond’ to”. Applicant respectfully disagrees. Claim 52 clearly recites “wherein each of said features comprises corresponding measurement data.” Thus, the measurement data corresponds to the recited features. In other words, each feature comprises measurement data corresponding to such feature. Applicant respectfully submits that this claim language is sufficiently clear under 35 U.S.C. § 112, second paragraph so that one of ordinary skill in the art familiar with the English language can reasonably ascertain the meaning of this claim (i.e., that the measurement data corresponds to the features). Thus, Applicant respectfully requests withdrawal of this rejection of claim 52.

### VIII. Conclusion

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

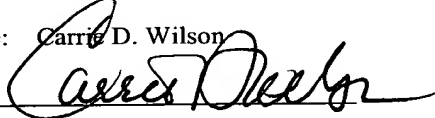
Applicant believes no fee is due with this response. However, if a fee is due, please charge Deposit Account No. 50-1078, under Order No. 10004226-1 from which the undersigned is authorized to draw.

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Date of Deposit: June 7, 2004


Typed Name: Carrie D. Wilson

Signature: \_\_\_\_\_



Respectfully submitted,

By: \_\_\_\_\_



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**1** : not corporeal : having no material body or form  
**2** : of, relating to, or constituting a right that is based on property (as bonds or patents) which has no intrinsic value  
 — **in-cor-po-re-al-ly** \-ə-lē\ *adverb*  
**in-cor-po-re-ity** \(\in-kōr-pə-rē-ə-tē\ *noun* (1601)  
 : the quality or state of being incorporeal : IM-MATERIALITY  
**in-cor-rect** \in-kə-'rekt\ *adjective* [Middle English, from Middle French or Latin; Middle French, from Latin *incorrectus*, from *in-* + *correctus* correct] (15th century)  
**1** *obsolete* : not corrected or chastened  
**2 a** : INACCURATE. **FAULTY b** : NOT TRUE : WRONG  
**3** : UNBECOMING, IMPROPER  
 — **in-cor-rect-ly** \-'rek(t)-lē\ *adverb*  
 — **in-cor-rect-ness** \-nəs\ *noun*  
**in-cor-ri-gi-ble** \(\in-kōr-ə-jə-bəl, -'kär-\ *adjective* [Middle English, from Late Latin *in-corrīgibilis*, from Latin *in-* + *corrīgere* to correct — more at **CORRECT**] (14th century)  
 : incapable of being corrected or amended: as  
**a** (1) : not reformable : DEPRAVED (2) : DELIN-QUENT **b** : not manageable : UNRULY **c** : UNAL-TERABLE, INVETERATE  
 — **in-cor-ri-gi-bil-i-ty** \-kōr-ə-jə-'bi-lə-tē, -'kär-\ *noun*  
 — **in-corrigible** *noun*  
 — **in-cor-ri-gi-ble-ness** \-'kōr-ə-jə-bəl-nəs, -'kär-\ *noun*  
 — **in-cor-ri-gi-bly** \-blē\ *adverb*  
**in-cor-rupt** \in-kə-'rəpt\ *also* **in-cor-rupt-ed** \-'rəp-təd\ *adjective* [Middle English, from Latin *in-corrūptus*, from *in-* + *corrūptus* cor-rupt] (14th century)  
 : free from corruption: as **a** *obsolete* : not affected with decay **b** : not defiled or depraved : UPRIGHT **c** : free from error  
 — **in-cor-rupt-ly** \-'rəp(t)-lē\ *adverb*  
 — **in-cor-rupt-ness** \-nəs\ *noun*  
**in-cor-rupt-ible** \in-kə-'rəp-tə-bəl\ *adjective* (14th century)  
 : incapable of corruption: as **a** : not subject to decay or dissolution **b** : incapable of being bribed or morally corrupted  
 — **in-cor-rupt-ibil-i-ty** \-'rəp-tə-'bi-lə-tē\ *noun*  
 — **incorruptible** *noun*  
 — **in-cor-rupt-ibly** \-'rəp-tə-blē\ *adverb*  
**in-cor-ruption** \in-kə-'rəp-shən\ *noun* (14th century)  
*archaic* : the quality or state of being free from physical decay  
**in-crease** \in-'krēs, 'in-\ *verb* **in-creased**; **in-creas-ing** [Middle English *encreisen*, from Middle French *encreistre*, from Latin *in-crescere*, from *in-* + *crescere* to grow — more at **CRESCENT**] (14th century)  
*intransitive verb*  
**1** : to become progressively greater (as in size, amount, number, or intensity)  
**2** : to multiply by the production of young  
*transitive verb*  
**1** : to make greater : AUGMENT  
**2** *obsolete* : ENRICH ☆  
 — **in-creas-able** \-'krē-sə-bəl, -'krē-\ *adjective*  
 — **in-creas-er** *noun*  
**in-crease** \in-'krēs, in-\ *noun* (14th century)  
**1** : the act or process of increasing: as **a** : addition or enlargement in size, extent, or quantity **b** *obsolete* : PROPAGATION  
**2** : something that is added to an original stock or amount by augmentation or growth (as offspring, produce, profit)  
**in-creas-ing-ly** \in-'krē-sin-lē, 'in-,krē-\ *adverb* (14th century)  
 : to an increasing degree  
**in-cre-ate** \in-'krē-'āt, in-'krē-ət\ *adjective* [Middle English *increat*, from Late Latin *in-creatus*, from Latin *in-* + *creatus*, past participle of *creare* to create] (15th century)  
 : UNCREATED

**in-cred-i-ble** \(\in-'kre-də-bəl\ *adjective* [Middle English, from Latin *incredibilis*, from *in-* + *credibilis* credible] (15th century)  
 : too extraordinary and improbable to be believed; *also* : hard to believe  
 — **in-cred-i-bil-i-ty** \-'kre-də-'bi-lə-tē\ *noun*  
 — **in-cred-i-ble-ness** \-'kre-də-bəl-nəs\ *noun*  
**in-cred-i-bly** \-blē\ *adverb* (circa 1500)  
**1** : in an incredible manner  
**2** : EXTREMELY (*incredibly* difficult)  
**in-cre-du-li-ty** \in-kri-'dū-lə-tē, -'dyū-\ *noun* (15th century)  
 : the quality or state of being incredulous : DIS-BELIEF  
**in-cred-u-lous** \(\in-'kre-jə-ləs, -dyə-ləs\ *adjective* [Latin *incredulus*, from *in-* + *credulus* credulous] (1579)  
**1** : unwilling to admit or accept what is offered as true : not credulous : SKEPTICAL  
**2** : INCREDIBLE  
**3** : expressing incredulity ☆  
 — **in-cred-u-lous-ly** *adverb*  
**in-cre-ment** \in-'krə-mənt, 'in-\ *noun* [Middle English, from Latin *incrementum*, from *in-crescere* to increase] (15th century)  
**1** : the action or process of increasing especially in quantity or value : ENLARGEMENT  
**2 a** : something gained or added **b** : one of a series of regular consecutive additions **c** : a minute increase in quantity  
**3** : the amount or degree by which something changes; *especially* : the amount of positive or negative change in the value of one or more of a set of variables  
 — **in-cre-men-tal** \in-'krə-'men-tl, in-\ *adjective*  
 — **in-cre-men-tal-ly** \-t'l-ē\ *adverb*  
**in-cre-men-tal-ism** \in-'krə-'men-t'l-i-zəm\ *noun* (1966)  
 : a policy or advocacy of a policy of political or social change by degrees : GRADUALISM  
 — **in-cre-men-tal-ist** \-t'l-ist\ *noun*  
**incremental repetition** *noun* (1918)  
 : repetition in each stanza (as of a ballad) of part of the preceding stanza usually with a slight change in wording for dramatic effect  
**in-cres-cent** \in-'kre-sənt\ *adjective* [Latin *in-crescent-*, *in-crescens*, present participle of *in-crescere*] (circa 1658)  
 : becoming gradually greater : WAXING (the *in-crescent* moon)  
**in-crim-i-nate** \in-'kri-mə-nāt\ *transitive verb* **-nat-ed**; **-nat-ing** [Late Latin *in-criminatus*, past participle of *in-criminare*, from Latin *in-* + *crim-*, *crimen* crime] (circa 1736)  
 : to charge with or show evidence or proof of involvement in a crime or fault  
 — **in-crim-i-na-tion** \-'kri-mə-'nā-shən\ *noun*  
 — **in-crim-i-na-to-ry** \-'krim-nə-,tōr-ē, -'kri-mə-, -tōr-\ *adjective*  
**incrusted** *variant* of **ENCRUST**  
**in-crus-ta-tion** \in-'krəs-'tā-shən\ *noun* [Latin *incrustation-*, *incrustatio*, from *incrustare* to encrust] (1644)  
**1 a** : a crust or hard coating **b** : a growth or accumulation (as of habits, opinions, or customs) resembling a crust  
**2** : the act of encrusting : the state of being encrusted  
**3 a** : OVERLAY **b** : INLAY  
**in-cu-bate** \in-'kyə-bāt, 'in-\ *verb* **-bat-ed**; **-bat-ing** [Latin *incubatus*, past participle of *incubare*, from *in-* + *cubare* to lie] (circa 1721)  
*transitive verb*  
**1** : to sit on (eggs) so as to hatch by the warmth of the body; *also* : to maintain (as an embryo or a chemically active system) under conditions favorable for hatching, development, or reaction  
**2** : to cause (as an idea) to develop  
*intransitive verb*  
**1** : to sit on eggs

**2** : to undergo incubation  
 — **in-cu-ba-tive** \-bā-tiv\ *adjective*  
 — **in-cu-ba-to-ry** \-kyə-bə-tōr-ē, -bā-tə-rē\ *adjective*  
**in-cu-ba-tion** \in-'kyə-'bā-shən, in-\ *noun* (1646)  
**1** : the act or process of incubating  
**2** : INCUBATION PERIOD  
**incubation period** *noun* (1879)  
 : the period between the infection of an individual by a pathogen and the manifestation of the disease it causes  
**in-cu-ba-tor** \in-'kyə-bā-tər, 'in-\ *noun* (1879)  
 : one that incubates: as **a** : an apparatus in which eggs are hatched artificially **b** : an incubator paratus with a chamber used to provide controlled environmental conditions especially for the cultivation of microorganisms or the care and protection of premature or sick babies  
**in-cu-bus** \in-'kyə-bəs, 'in-\ *noun*, plural *-bi, -bē* *also* **-buses** [Middle English, from Late Latin, from Latin *incubare*] (15th century)  
**1** : an evil spirit that lies on persons in their sleep; *especially* : one that has sexual intercourse with women while they are sleeping  
**2** : NIGHTMARE  
**3** : one that oppresses or burdens like a nightmare  
**in-cul-cate** \in-'kəl-kāt, 'in-\ *transitive verb* **-cat-ed**; **-cat-ing** [Latin *inculcans*, past participle of *inculcare*, literally, to tread on, from *in-* + *calcare* to trample, from *calc*, *calc-heel*] (1550)  
 : to teach and impress by frequent repetition or admonitions  
*synonym* see **IMPLANT**  
 — **in-cul-ca-tion** \in-'kəl-'kā-shən\ *noun*  
 — **in-cul-ca-tor** \in-'kəl-'kā-tər, 'in-\ *noun*  
**in-cul-pa-ble** \(\in-'kəl-pə-bəl\ *adjective* (15th century)  
 : free from guilt : BLAMELESS  
**in-cul-pate** \in-'kəl-pāt, 'in-\ *transitive verb* **-pat-ed**; **-pat-ing** [Late Latin *inculpatus*, from Latin *in-* + *culpatus*, past participle of *culpāre* to blame, from *culpa* guilt] (1799)  
 : INCRIMINATE  
 — **in-cul-pa-tion** \in-'kəl-'pā-shən\ *noun*  
 — **in-cul-pa-to-ry** \in-'kəl-pə-tōr-ē, -bā-tōr-\ *adjective*  
**in-cult** \in-'kəlt\ *adjective* [Latin *incultus*, from *in-* + *cultus*, past participle of *colere* to cultivate — more at **WHEEL**] (1599)

★ SYNONYMS

**Increase, enlarge, augment**, *multiply* mean to make or become greater. **Increase** is used intransitively implies progressive growth in size, amount, or intensity (his waistline increased with age); used transitively it may imply simple not necessarily progressive addition (*increased* her landholdings). **Enlarge** implies expansion or extension that makes greater in size or capacity (*enlarged* the kitchen). **Augment** implies addition to what already well grown or well developed (his inheritance *augmented* his fortune). **Multiply** implies increase in number by natural generation or by indefinite repetition of a process (with each attempt the problems *multiplied*).

□ USAGE

**Incredulous** Sense 2 has been revived in this century after a couple of centuries of disuse. Although it is a sense with good literary precedent—among others Shakespeare used it—many people think it is a result of confusion with *incredible*, which is still the usual word in this sense.